

Kettle Moraine State Forest - Pike Lake Unit

Property and Regional Analysis



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I. Introduction and Overview

Purpose and Organization of the Regional and Property Analysis

The Regional and Property Analysis (RPA) for the Pike Lake Unit of the Kettle Moraine State Forest provides baseline information on the property as well as information on how the property fits into or relates to its larger ecological and social context. This is the area that influences and is, to a degree, influenced by the Pike Lake property. The RPA serves as an important source of information for the planning team and the public. Functionally, it provides a view of the property's suitable potential future roles or niches. The RPA is prepared during the first phase of the planning process as a stand-alone companion document to the Master Plan. This RPA is organized into three primary sections:

The Regional Analysis section of this document describes the broader biological/ecological, cultural, economic, and recreational environment that affects the property and its use. It identifies significant ecological and recreational needs within the property's region. It also defines existing and potential social demands or constraints that affect the property that should be considered during the planning process.

Note: Because the "zone of influence" varies and data sources vary in the area or region they cover, the size and location of the region discussed changes by topic, and occasionally multiple regions are discussed under one topic. An additional intent of this approach is to try and keep the discussion as focused and relevant as possible to the property.

The Property Analysis section of this document describes the property's existing resources, uses, management opportunities, and needs. This section also describes surrounding and adjacent lands, indicating how the character of these lands may affect the property.

The Findings and Conclusions section of this document serves as the basis for the development of the Draft Vision Statement and Property Goals.

Overview of The Property and Region

The Pike Lake Unit was designated as a State Park from its creation in 1971 until 1997, at which time its administrative designation was changed and was incorporated into the Kettle Moraine State Forest. The 720-acre Pike Lake Unit of the Kettle Moraine State Forest is located in Washington County, approximately 25 miles northwest of Milwaukee. The property abuts the Village of Slinger and portions of the property lie within the City of Hartford. The area is a mix of agriculture, urban, rural residential, forest, and wetland. Ready access to the area from urban centers in southeastern Wisconsin is provided by State Highways 60 and 83, and Interstate 41. See Maps A and B.

Washington County's landscape was shaped by glaciers and consists of wooded hills, valleys, rivers and lakes, wetlands, and abundant farmland. Rugged kettle moraine features define the central portion of the County, including the Pike Lake Unit. The 522-acre Pike Lake, a spring-

fed kettle lake, attracts tourists and day use visitors to the property to motorboat, ski, swim, windsurf, hunt waterfowl and fish. Hiking, cross-country skiing and rustic camping is also popular at this rolling, forested property. The National Ice Age Trail follows the glacial moraine through the county and is an important feature of the Pike Lake Unit.

II. Description and Analysis of the Region

Land Use and Trends in the Pike Lake Area

Washington County lies within the seven county Southeastern Wisconsin region and is part of the Milwaukee metropolitan area. It is the most densely populated region of the state, with over 1.9 million people in 2000. The regional population distribution is shown on Map C.

Washington County lies in the northwestern portion of this region, and contains a mix of urban areas, small villages, rural subdivisions, and areas of farmland, forest, and wetlands. While agricultural and other undeveloped lands are still common here, this area is rapidly developing as cities and villages push outward and more rural subdivisions are platted.

The County has experienced significant population growth and increased urbanization in recent decades, and it is projected to grow by nearly 34 percent (39,800 people) by 2035. This is the third highest percentage increase in the region¹. Between 1970 and 2004, the population increased by 93.6% (See Table 1). Population is projected to increase to 149,500 in 2025 and grow to 157,300 by 2035². Recently, the City of Hartford, situated next to the Pike Lake Unit, between 2000 and 2002 saw the highest growth in Washington County. The city gained 532 residents during that two year span. Farming has been on a steady decline in Washington County with a loss of 31% of its farms and 34% of its agricultural land between 1980 and 2002.

Table 1: Population Growth for Washington County

Year	Population	Percentage Change
1970	63,834	-
1980	84,848	+ 33%
1990	95,328	+ 12%
2000	117,493	+ 23%
2004	123,587	+5% +93.6% from 1970

As of 2000, urban development (residential, commercial, industrial, recreation, and transportation) made up more than 17% of land uses in Washington County. Between 1975 and 2000 urban land uses increased by about 75%. Breaking down some of the urban components shows residential uses increased 103%, commercial land uses increased by about 115% and industrial land uses increased by about 130%³. The remaining 83% of the land use in the county is non-urban. Agriculture was the largest single non-urban land use at about 51%.

¹ SEWRPC Community Assistance Planning Report No. 287, A Multi-Jurisdictional Comprehensive Plan for Washington County: 2035, Southeastern Wisconsin Regional Planning Commission, March 2008

² SEWRPC: A Park and Open Space Plan for Washington County, Washington County Planning and Parks Department, Southeastern Wisconsin Regional Planning Commission, March 2004

³ Wisconsin Department of Administration Population Estimates for 2004

Woodlands, wetlands, and surface water cover about 25% of the county. Non-urban lands decreased by just over 8% between 1975 and 2000. Most of this loss is due to conversion of agricultural land to urban use¹.

To minimize future environmental impacts of population growth *The Park and Open Space Plan for Washington County*⁴ recommends preserving more than 77,000 acres of environmentally significant open space lands. As part of the open space, it recommends placing more than 43,000 acres of environmentally sensitive land in protective zoning districts to prevent incompatible development. The plan further recommends that prime agricultural lands identified in the plan be preserved for continued agricultural use.

Regional Ecological – Biological Resources

The Southeast Glacial Plains Ecological Landscape

The Pike Lake Unit is located within the Southeast Glacial Plains Ecological Landscape (Figure 1), an area characterized by glacial till plains and moraines deposited during the Wisconsin Ice Age. Soils are lime-rich tills overlain in most areas by a silt-loam loess cap. Agricultural and residential interests throughout the landscape have significantly altered the historical vegetation. Most of the rare natural communities that remain are associated with large moraines or where the Niagara Escarpment occurs close to the surface.

Historically, upland vegetation in the Southeast Glacial Plains consisted of a mix of prairie, oak forests and savanna (oak openings), and maple-basswood forests. Wet-mesic and wet prairies, southern sedge meadows, emergent marshes, tamarack swamps, and calcareous fens were found in lower and wetter areas. Figure 2 shows the estimated historic land cover makeup of this ecological landscape. End moraines and drumlins are dominant features across much of the Southeast Glacial Plains supporting savannas and forests

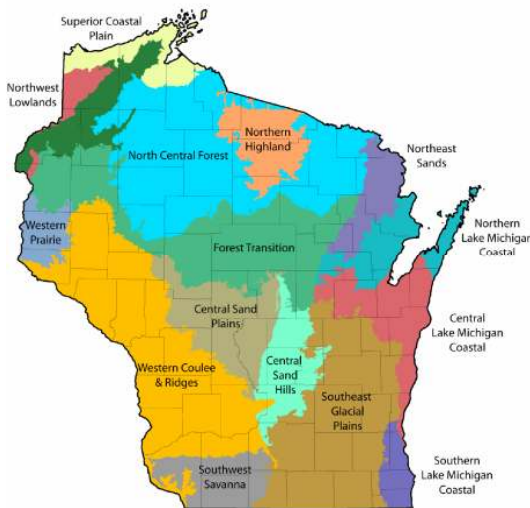


Figure 1
Ecological Landscapes of Wisconsin.

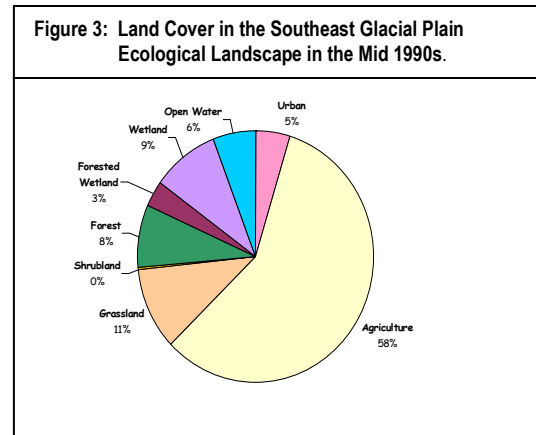
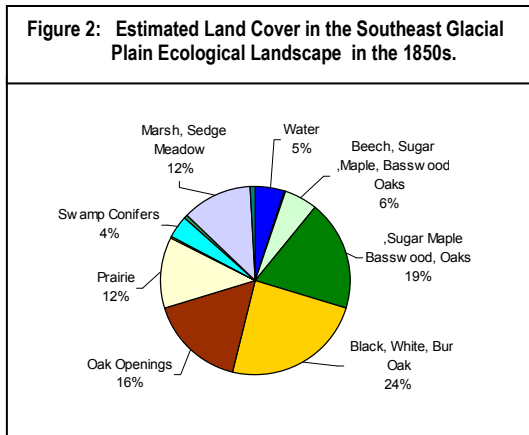
Fire was the dominant historic disturbance agent. Fire maintained the prairies and oak savannas, and likely oak forests. A fire barrier presented by the Crawfish, Bark, and Rock Rivers, and their associated wetlands, led to the development of maple-basswood forest in the eastern portion region, including the Kettle Moraine area.

Agricultural and urban land use practices have drastically changed the land cover of the Southeast Glacial Plains since Euro-American settlement. As shown in

Figure 3, the current vegetation is primarily agricultural cropland. Remaining woodlands occupy only about 10% of the land area and consist of maple-basswood, lowland hardwoods, and oak. No large forests exist today except on the Kettle Interlobate Moraine which has topography too

⁴ Community Assistance Planning Report No. 136, 3rd edition, *A Park and Open Space Plan for Washington County*, March 2004, prepared by the Southeastern Wisconsin Regional Planning Commission, http://www.sewrpc.org/publications/capr/capr-136_3rd_ed_posp_washington_co.pdf

rugged for agriculture. Some existing forest patches that were formerly savannas have succeeded to hardwood forest due to fire suppression. The current general land cover of the Mid-Kettle Moraine area is shown on Map D.



This Ecological Landscape contains important fens, tamarack swamp, wet prairies, and wet-mesic prairies that contain rare plants and animals. However, most wetlands have experienced widespread ditching, grazing, and infestation by invasive plants.

The total land area for the Ecological Landscape is approximately 4.9 million acres, of which only 10% is classified as timberland. Only about 4% of the area of this Ecological Landscape is publicly owned. Many of these are the least developed areas in southeastern Wisconsin, and the Kettle Moraine represents the largest contiguous patch of undeveloped land.

Regional Conservation Needs

Habitats

Natural habitats in the Southeast Glacial Plains EL are isolated within a landscape dominated by agriculture and increasingly pressured by development. The majority of non-agricultural lands are wetlands. Most of the upland forests, savanna, and prairies were historically converted to agricultural uses, and are extremely scarce today, except where the topography is too steep to cultivate.

Given the changes that have occurred, this Landscape now plays particularly important roles in the conservation of the habitat types listed in Table 2. These habitats are critical for the protection or enhancement of the endangered, threatened and rare plant and animal

Table 2: Natural Communities with Major or Important Conservation Opportunities in the Southeast Glacial Plains			
	<i>Open</i>	<i>Mixed</i>	<i>Closed canopy</i>
<i>Dry</i>	Dry prairie	Cedar glade	Southern dry forest
<i>Mesic</i>	Dry-mesic prairie Mesic prairie Wet-mesic prairie	Oak opening Oak woodland	Southern dry-mesic forest Northern wet-mesic forest Southern mesic forest
<i>Wet</i>	Calcareous fen Southern sedge meadow Emergent aquatic Emergent aquatic-wild rice Submergent aquatic Ephemeral pond Northern sedge meadow Wet prairie	Bog relict Shrub-carr Alder thicket	Northern hardwood swamp Floodplain forest Southern tamarack swamp Northern wet forest Southern hardwood swamp

Natural communities in **bold** represent "major" opportunities (where the community is represented by many significant occurrences within an Ecological Landscape, or that the EL is appropriate for major restoration activities). Those in regular type are "important" opportunities (situations where the community type is not extensive or common in the EL but has a minimum of one to several significant intact occurrences that should be considered for protection or where the natural community type is restricted to just one or a few ELs within the state and should be considered for management there because of limited geographic distribution and a lack of opportunities elsewhere). The **shaded** community types are present on the Pike Lake property.

species populations in this region, and thus, for maintenance of the region's biological diversity.

Endangered, Threatened, and Rare Species

"Rare" animals include all of those species that appear on the WDNR's NHI Working List and are classified as "Endangered," "Threatened," or "Special Concern" by the State or Federal government. As of September 2007, NHI documented 150 rare species. These include 2 Federal Endangered Species, 1 Federal candidate for future listing, 31 State Endangered species, 26 State Threatened species, and 93 State Special Concern species⁵. Another record of species with special management needs is the Department's "Wildlife Species of Greatest Conservation Need (SGCN)" list. This appears in Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need (a State Wildlife Action Plan)⁶. SGCN include species already recognized as Endangered, Threatened, or Special Concern, or other species that have low or declining populations in the state. In total, 43 of these species are potentially associated with the Kettle Moraine portion of the Landscape. They are discussed in more detail later in the property analysis portion of this report.

Kettle Moraine Landscape's Resources and Conservation Opportunities

The Kettle Moraine is a heavily forested, topographically rough, unique sub-portion of the South East Glacial Plains Ecological Landscape. It's a geological feature that lies where the margins of two major glacial lobes, the Green Bay and the Lake Michigan, met. It is generally less developed than surrounding areas that have more level terrain and richer soils. It is one of the few locations in this Landscape with substantial public ownership. The Kettle Moraine has three distinct sections. Each has different ecological and cultural characteristics. The Pike Lake Unit is within what is termed the Middle Kettle area. The Kettle Moraine Units are shown on Map A.

South Kettle Moraine: Outstanding features include one of the Upper Midwest's greatest concentrations of remnant Oak Openings, Oak Woodland, Calcareous Fen, Wet-mesic Prairie, Southern Sedge Meadow, and Southern Tamarack Swamp. Numerous rare species are associated with and sometimes dependent on these rare communities. Unlike most parts of this Landscape, these natural communities are less isolated here, and in some cases offer great opportunities for expansion and enhancement.

Extensive forests now occur in some parts of the Southern Kettle, consisting of overgrown Oak Openings, some oak forest, and plantations of white and red pine that increase effective size of some of these forests, and provide habitat for some species which otherwise would likely not be present. Some of these are large enough to support rare forest interior birds such as the Cerulean Warbler, Hooded Warbler, and Acadian Flycatcher. Planning, wherever large forested areas now occur, needs to be conducted by an interdisciplinary group, where the opportunities of maintaining – or increasing - forest interior conditions are weighed against the feasibility of oak savanna restoration.

North Kettle Moraine: This portion of the Kettle Moraine is characterized by extensive hardwood forests, several lakes and associated wetlands, lowland forests of cedar, tamarack,

5 Wisconsin Natural Heritage Inventory Working List, 2006c. Wisconsin Natural Heritage Inventory Program, Bureau of Endangered Resources, Wisconsin DNR. Madison, WI. (See <http://dnr.wi.gov/org/land/er/> for the most recent version of the list.)

6 Wisconsin Department of Natural Resources. 2006b. Wisconsin Wildlife Action Plan. Available at <http://dnr.wi.gov/org/land/er/wwap/plan/>.

and ash, and shrub swamps composed of willow, dogwood, and alder. Floodplain forest, sedge meadows, and spring seeps are relatively minor here in terms of acreage, but important for their context and for the species they support. The prairie and savanna elements that characterize the southern Kettle Moraine are, for the most part, less abundant. This is one of the few places in the Southeast Glacial Plains that will potentially sustain populations of species dependent on forest interior conditions.

Middle Kettle Moraine: In this part of the interlobate moraine, where Pike Lake is located, the vegetation is far more fragmented than it is to the north or south. This offers contextual challenges to managers owing to the number of developments already in this area, and the absence of large blocks of habitat such as those found in the north and south. Major considerations include reducing isolation and edge (e.g., by using river and wetland corridors, developing buffers where needed, and working with key private landowners to accomplish defined ecological goals which cannot be accomplished within single ownerships). Opportunities to reconnect some of the now disjunct areas will be difficult at best, and very expensive. As the cultural features responsible for this fragmentation include the Interstate 94 corridor and a number of upscale subdivisions, in some places the separation between patches of semi-natural habitat is now effectively permanent.

Trends and Projected Potential Future Changes

Several current trends are expected to continue, and if so, will impact natural communities in the ecological landscape. Vegetative succession is likely to continue due to the lack of fire disturbance and the invasion of non-native plants. Continued residential development is likely, with associated loss and fragmentation of upland community types, and possible further alterations of hydrology and water quality. Recreation demand is likely to increase as population pressure becomes more intense.

Forest clearing, and prairie and savanna conversion for agricultural use has radically changed the area, leading to fragmentation, isolation, habitat loss, altered hydrology, simplification, and the introduction of invasive species. Continued residential and business development has exacerbated these issues, and will continue to be an issue. The region's population has been growing about 1% annually. Land devoted to urban and suburban development has increased significantly over the last decade and now comprises 5% of the Ecological Landscape (second only to the Southern Lake Michigan Coastal Ecological Landscape).

Management Needs and Opportunities for the Kettle Moraine Landscape

The most significant natural features of the Kettle Moraine's ecological landscape are its unique glacial features, and the following natural communities:

- southern dry-mesic (upland) forest
- northern hardwood swamp
- ephemeral pond (and forest seeps)
- calcareous fen
- wet-mesic prairie
- southern sedge meadow
- oak opening oak woodland
- floodplain forest
- southern tamarack swamp

Only some of these natural communities have **major or important conservation opportunities** in the Northern to Middle Kettle area. They are discussed below.

Upland Forests: From a landscape perspective, upland forest types are lacking large blocks, younger age classes and older age classes. Every terrestrial community type is currently

underrepresented. Stand, or patch-level, isolation, is now the landscape “norm”. The Kettle Moraine offers opportunities to manage at large scales and maintain populations of area sensitive species, particularly southern forest birds, that have seriously declined or disappeared elsewhere in this Landscape. The North and South Kettle Moraine are the largest blocks of forest remaining in the Landscape and in southeastern Wisconsin. Here is one of only a few places in this Landscape where habitat isolation can potentially be overcome, patch size can be increased, and ecological connectivity can be maintained or re-established. This is especially true of, but not limited to, upland habitats.

Larger tracts of upland forests are important habitat for species such as Cerulean Warblers, Acadian Flycatcher, Hooded Warbler, and other forest species. These occur in the Kettle Moraine State Forest, and are sometimes found in smaller patches of forest elsewhere in the region. The Cerulean Warbler (*Dendroica cerulea*) is a state-threatened insectivorous bird associated with older deciduous forests of southern Wisconsin. Forests that occur in relatively large patches and have a component of large-diameter trees (20" minimum) appear to be desirable habitat for these birds. These habitat characteristics make Cerulean Warbler the species with perhaps the most exacting requirements to be considered in forest management.

While oak woodlands and openings occurred historically in both the Middle and Southern Kettle Moraine areas, today the Southern Unit of the Kettle Moraine State Forest offers the better opportunity to restore large complexes of these habitats, with forested habitats being a more suitable emphasis in the Mid-kettle area (which includes the Pike Lake Unit).

Shorelines, wetlands, swamps, and ephemeral ponds: While wetlands are not as abundant in the Kettle Moraine portion of this ecological landscape they are important habitats worthy of protection or restoration where opportunities occur.

Scattered hardwood and tamarack swamps, forested seeps and ephemeral ponds support unusual assemblages of species and many are in need of restoration, management and protection.

Riparian zones throughout the Ecological Landscape present an opportunity for restoration as most have been degraded through forest clearing, urban development, and intensive agricultural practices. Most wetlands have experienced widespread ditching, grazing, and infestation by invasive plants. The hydrology has been widely altered by roads, railroads, ditches, impoundments, drainage, filling and dredging.

Glacial features: Glacial elements, like eskers, kames, and drumlin fields, are unique and, in some cases world-renowned, features of the Kettle Moraine area.

Management Challenges

Primary issues that confront the long-term quality and value of these natural communities in this ecological landscape include fragmentation, invasive species, excessive deer population, and management practices that lead to over-representation of particular successional stages.

Regional Water Resources

Lakes and larger rivers are not abundant in the Pike Lake area. There are 13 major lakes with 50 or more acres entirely within Washington County, listed in Table 3. Likewise, the nearby eastern portion of Dodge County is lake poor, with the 2,800 acre Sinissippi Lake being the primary feature. To the south, northern Waukesha County boasts a number of large lakes, such as the Okauchee and Pewaukee. Nearly all of the lake shorelines in south eastern Wisconsin are privately owned and heavily developed, with Pike Lake having the largest amount of public lake frontage in this area, nearly all of which is in the Pike Lake Unit. The water quality of most streams and lakes within the region have been significantly impacted by nutrient runoff and soil erosion from development and agriculture.

Table 3: Major Lakes of Washington County

Lake	Surface Acreage	Max. depth
Big Cedar Lake	932	105
Pike Lake	522	45
Little Cedar Lake	246	56
Druid Lake	120	53
Silver Lake	118	47
Friess Lake	117	48
Smith Lake	86	5
Lucas Lake	78	15
Green Lake	71	37
Barton Pond	67	5
Bark Lake	62	34
Lake Twelve	53	19
Wallace Lake	52	35

Significant Public Recreation Lands of the Region

The significant public recreation properties within about 25 miles of Pike Lake are listed below. Map A shows State and Federal properties in the area.

Kettle Moraine State Forest: Three other units of the Kettle Moraine State Forest are located wholly or in part within 25 miles of the Pike Lake Unit. Each provides somewhat different types of recreation opportunities and experiences.

- *Northern Unit.* The Northern Unit is located 45 minutes north of Milwaukee and 30 minutes north of Pike Lake. Amid almost 30,000 acres of hills, lakes, grasslands and woods, visitors can camp, swim, boat, hike, and hunt. The forest is known internationally for its unique glacial features.
- *Loew Lake Unit:* About six miles southwest of Pike Lake, the 1,000 acre Loew Lake Unit encompasses a valley with a portion of the east branch of the Oconomowoc River and the 23-acre Loew Lake. It is open to low-impact recreation, including hiking, hunting, and horseback riding. The Ice Age National Scenic Trail extends

- through the property on the west side of the Oconomowoc River. No developed facilities are provided.
- *Lapham Peak Unit:* The Lapham Peak Unit is 25 miles west of the City of Milwaukee and about 20 miles south of Pike Lake. The approximately 1,000 acre property is recognized for its unique glacial features. Trails wind through wooded hills and open meadows, abundant bird life and wildlife can be observed from all trails, and guided bird hikes are held each spring. There are several prairie restoration sites and a butterfly garden.
 - *Southern Unit:* The Southern Unit, the second largest unit at about 29,000 acres, lies just a few miles south of the Lapham Peak Unit. Like the Northern Unit, it is characterized by hills, lakes, forests, and grasslands. It is highly popular for hiking, biking, horse riding, swimming, camping, picnicking, and hunting.

Horicon National Wildlife Refuge and Horicon Marsh State Wildlife Area: Horicon National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, is located on the west branch of the Rock River in southeastern Wisconsin and encompasses 21,000 acres. The southern 11,000 acre Horicon Marsh State Wildlife Area is managed by the Wisconsin Department of Natural Resources. Both agencies work together to manage the marsh as one 32,000-acre wetland ecosystem. It is the largest freshwater cattail marsh in the United States. Renowned for its migrant flocks of Canada geese, it is also home to more than 260 kinds of migratory birds.

Due to its importance to wildlife, Horicon Marsh has been designated as a "Wetland of International Importance" and a "Globally Important Bird Area". Visitors can hike, boat, bike, auto tour, fish, cross-country ski, snowshoe, bird watch, hunt, trap, enjoy nature photography and art, watch wildlife, and participate in environmental education talks, tours, and programs.

Jackson Marsh Wildlife Area: Located in eastern Washington County, Jackson Marsh is approximately 2,500 acres. Recreational activities include hunting for deer, turkeys, pheasants, waterfowl and small game, fishing, trapping, hiking, wildlife viewing, and snowmobiling on an established trail. A special Feature of the property is a 1,500-acre State Natural Area, which is home to a variety of interior forest nesting birds.

Theresa Marsh State Wildlife Area: Approximately 5,900 acres, the Theresa Marsh Wildlife Area is located 30 miles northwest of Milwaukee along Hwy 41. The habitats consist primarily of marshland, flowages, streams, and lowland forests. Principal wildlife found in the area includes ducks, geese, deer, wild turkeys, pheasants, rabbits, squirrels, great egrets, raptors, shorebirds, common terns, and a variety of other wetland and shorebird species. Recreational opportunities include hunting (waterfowl, deer, pheasants, turkeys and small game), wildlife viewing, fishing, trapping, snowmobiling on designated trails, and hiking.

Allenton State Wildlife Area: Like the nearby Theresa Marsh State Wildlife Area, the 1,100-acre Allenton State Wildlife Area, located in Western Washington County, offers a variety of upland and marshlands and stream habitats, including a trout stream. The property is used for a variety of hunting, fishing, trapping and wildlife viewing pursuits. Deer, turkey, waterfowl and pheasant hunting are especially popular. State Highway 41 provides easy access to the property for residents of the Milwaukee Metro Area.

Ice Age National Scenic Trail Corridor: The Ice Age Trail, which is planned to extend approximately 1,000 miles across the State of Wisconsin along the terminus of the continental glacier, was designated as a National Scenic Trail by the United States Congress in 1980. The

Trail is administered by the National Park Service in cooperation with the Wisconsin Department of Natural Resources and the Ice Age Trail Park and Trail Foundation. In Southeastern Wisconsin, the Trail is located or is proposed to be located in the western portions of Walworth, Waukesha, and Washington Counties. About 27 miles of the proposed 37-mile length of the Trail within Washington County had been completed by 2006. Existing segments of the Ice Age Trail in the County, as well as the Ice Age Trail corridor adopted by the three managing agencies is shown on Map A. Existing segments of the Trail are open to pedestrian travel only which includes hiking, snowshoeing, and cross-country skiing.

Havenwoods Environmental Awareness Center: Havenwoods is a 237-acre state owned and managed green space in the City of Milwaukee that serves as a major regional environmental education and recreation center. It has grasslands, forest, wetland, Lincoln Creek, and yard and garden areas, as well as nature trails, and hiking, biking and cross-country skiing trails. The Center also has an auditorium, classrooms, displays, and a resource center.

Washington County Parks: In 2005, Washington County owned 15 park and open space sites, including seven major parks encompassing 1,229 acres; six other park and outdoor recreation sites encompassing 134 acres; and two other special outdoor recreation sites, not considered part of the county park system, encompassing 141 acres. In all, these 15 sites encompass 1,504 acres or about 0.5 percent of the total area of the county. The major county parks are shown in Table 4, below.

Table 4: Major County Parks of Washington County

Park	Location
Ackerman's Grove County Park	Town of Polk
Heritage Trails Park	Town of Polk
Family Park/Washington County Golf Course	Town of Hartford
Glacier Hills Park	Town of Richfield
Homestead Hollow Park	Village of Germantown,
Ridge Run Park	City and Town of West Bend
Sandy Knoll Park	Town of Trenton

The Washington County Park and Open Space Plan (2004) proposes three new county parks, all of which would have picnic areas, a playground, and trails. They propose a 200-acre park in the northwestern portion of the county, a 304-acre park in the northern portion of the Village of Germantown, and a 325-acre park in the southwestern portion of the county. With the April 2008 adoption of the Multi-jurisdictional Comprehensive Plan for Washington County: 2035, the proposed 304 acre park in the Village of Germantown is no longer a recommendation.

Outdoor Recreation Demand and Supply

Most Popular Outdoor Recreation Activities

The Washington County Park and Open Space Plan and SCORP are based on outdoor recreation use surveys. These surveys shed light on popular recreation activities within the region. The results are summarized on Table 5. The Pike Lake Unit supports many popular regional recreation interests. With the increasing county population growth these recreation activities will continue to be in high demand within the region and also at the Pike Lake Unit.

Table 5: Top Ten Outdoor Recreation Activities within the Lower Lake Michigan Costal Region (SCORP) and Washington County

Ranking	Lower Lake Michigan Costal Region	Washington County
1	Walk for pleasure *	Walking / hiking *
2	Family gathering *	On road biking *
3	Drive for pleasure *	Swimming in pools
4	Picnicking *	Beach swimming *
5	Visit a beach *	Fishing*
6	Bicycling *	Picnicking *
7	Swim in lakes, streams, etc *	Camping*
8	Boating (any type) *	Tobogganing / sledding
9	Swim in a outdoor pool	Nature Education Programs
10	Snow / ice activities (any type) *	Off-road Trail Biking

* Recreational activities supported at the Pike Lake Unit.

A 2003 report by the UW Milwaukee Center for Urban Initiatives and Research, *Resident Views on Parks, Recreation and Open Spaces in Washington County*, shows that over half of the county's households surveyed are interested in participating in hiking/walking, beach swimming, fishing, picnicking and camping. Seventy percent of respondents indicated a member of their household participated in hiking/walking. The actual rates for these and several other activities are shown below in Table 6.

Table 6: Outdoor Recreation Participation Rates for Washington County Households

Activity	Percent Actively Participating	Percent with an Interest in Participating
Hiking/walking	70%	76%
Beach swimming	45%	60%
Fishing	46%	58%
Picnicking	45%	56%
Camping	NA	54%
Nature education	19%	48%
Canoeing	16%	30%
Rec. Boating	23%	29%
Cross-country skiing – ungroomed trails	11%	22%

Regional Outdoor Recreation Facility Supply

Camping

The camping supply and the types available within a 25 mile radius of Pike Lake is detailed below and summarized on Table 5.

Northern Unit of the Kettle Moraine State Forest: The Northern Unit has two family campgrounds, a horse riders campground, a group camp, and backpack camping. Each are briefly described below.

- Mauthe Lake Campground - 137 family sites including 49 electrical campsites. A shower building and vault toilets are available.
- Long Lake Campground - 200 family sites with flush toilets and showers.

- *New Prospect Horseriders' Campground* – located on the 33-mile Bridle Trail in the State Forest. There are 12 family sites, 3 group sites, a picnic shelter, drinking water, and pit toilets. A 48-stall horse shelter building is available.
- *Greenbush Group Campground* - has nine outdoor sites that accommodate groups up to 60 individuals. Only tent camping is allowed. An enclosed shelter building, hand-pumps, and pit toilets are nearby.
- *Ice Age National Scenic Trail and Zillmer Trail camping* - sites have shelters for rustic backpack camping. Each campsite has a roofed trail shelter, fire ring, and pit toilet.

Pike Lake Unit of the Kettle Moraine State Forest: The Pike Unit Unit has one campground with 32 family campsites. Ten sites have electricity and one is accessible. The campground also has a flush toilet and shower building and a dump station

County Campgrounds: There are no existing or planned campgrounds in the Washington County parks. Two parks in Waukesha County within 25 miles of the Pike Lake Unit offer camping - Menomonee Park has 33 family campsites and 6 group campsites, and Naga-Waukee Park has 33 family campsites and 5 group campsites.

Private Campgrounds: There are five private campgrounds operating within 25 miles of the Pike Lake Unit offering 914 sites. Three campgrounds, Lake Lenwood Recreation Park, the Lazy Days, and Timber Trail are in Washington County. Sixty-six percent of these sites have partial hook-up (water + electricity), an additional 17% offer full hook-up (usually 30 or 50 amp electrical, water, sewage, septic, telephone, and sometimes cable TV). Other amenities include phone/modem hook-up, public phones, athletic fields, playgrounds, laundry facilities, recreational rooms, swimming pools, and miniature golf courses. Short-term rentals are limited.

Picnicking

Public picnic areas are currently provided at all major Washington County parks and also at the Pike Lake Unit of the Kettle Moraine State Forest. They are listed on Table 5.

Trails

The availability of hiking, biking, and cross-country ski trails in the Pike Lake area is shown on Table 7. Hiking and cross-country skiing opportunities are available at most larger public properties within 25 miles of Pike Lake, but bike trails are more limited. The table does not show biking opportunities on regional trails and local bike paths.

On-street and off-street bikeways are located in the City of West Bend, including a total of about five miles of off-street bikeways and about one mile of on-street bikeways. The Pike Lake trail extends about four miles from the City of Hartford to the Pike Lake Unit of the Kettle Moraine State Forest. The bikeway is located in the right-of-way of STH 60 from South Wilson Avenue to Pike Lake Drive, and off-street from that point into the State Forest.

The longest bikeway in Washington County is the Eisenbahn State Trail, which spans north and south for 24 miles within Fond du Lac and Washington Counties, of which 12 miles is in the northern half of the County. Of the 52 mile trail system recommended by the Washington County Parks and Open Space Plan, about 12 miles, or about 23 percent, would be provided by Washington County, and about three miles (including two existing miles), or about 6 percent, by the City of West Bend, as part of the Milwaukee River Corridor. The Milwaukee River recreation corridor would connect to a proposed Milwaukee River Corridor in Ozaukee County on the east and to the Kettle Moraine State Forest—Northern Unit on the north.

Swimming Beaches

A number of public swimming beaches are available in the region. In addition to those shown on Table 7, several local parks in the Pike Lake area, Kewaskum Kiwanis Community Park, Slinger Fireman's Park, and Regner Park, provide swimming as well. Privately owned swimming beaches open to the public on a fee basis are provided at Wally and Bea's, Lake Lenwood Recreation Park, and at the Lazy Days Campground.

Table 7, summarizes the recreational facilities at Pike Lake and other public properties within 25 miles. Properties farther away are considered beyond the typical service area of most Pike Lake Unit visitors and area residents.

Table 7: Recreational Activities at the Pike Lake Unit and Public Properties within 25 Miles

Property	Boat Launch	Swimming	Picnicking	Fishing	Canoeing	Hiking	Biking	XC Skiing	Camping
Pike Lake Unit – KMSF (WDNR)		•	•	•	•	•	•	•	•
Horicon Marsh National Wildlife Refuge (USFWS)	•		•	•	•	•	•	•	
Horicon Marsh State Wildlife Area (WDNR)	•		•	•	•	•	•	•	
Eisenbahn State Trail						•	•	•	
Ackermans Grove Park (Wash. Co.)	•	•	•	•	•	•			
Sandy Knoll Park (Wash. Co.)		•	•	•	•	•		•	
Glacier Hills Park (Wash. Co.)		•	•	•	•	•		•	
Homestead Hollow Park (Wash. Co.)			•	•	•	•		•	
Heritage Trails Park (Wash. Co.)			•			•			
Ridge Run Park (Wash. Co.)			•	•	•	•		•	
Family Park/Washington Co. Golf Course			•						
Goeden Park			•	•	•	•			
Henschke Hillside Lake Access	•				•				
Leonard J. Yahr County Park		•	•	•	•				
Riverside Park			•						
Naga-Waukeesha Park (Waukesha Co.)	•	•		•	•	•	•		•
Nashotah Park (Waukesha Co.)	•			•		•		•	
Fox Brook Park (Waukesha Co.)		•		•		•	•		
Menomonee Park (Waukesha Co.)		•		•		•	•	•	•
Harnischfeger Park (Dodge Co.)				•	•	•		•	

Public Nature Centers

There is only one nature center in Washington County, the Lac Lawrann Conservancy in West Bend. Lac Lawrann Conservancy is a 136-acre nature preserve and is part of the city's park system. It is a vast expanse of water, sky, wetlands, native hardwood forest, red pine plantation, tall grass prairie, and glacial landscapes. The Conservancy serves as an outdoor classroom for over 3,000 visitors each year, including over 1,200 school children. Visitors participate in self-guided hiking and skiing, guided tours, special events, school field trips, and a variety of public programs for families and individuals of all ages. Currently fund raising is being done to convert an old barn to an indoor nature center facility.

Hunting and Fishing Opportunities

In the Pike Lake area northwest of the Milwaukee Metro area, looking primarily at Washington County, there are about 12,000 acres of public lands available for hunting a wide variety of game, the most popular being deer, pheasant, turkey, and waterfowl. These properties include Jackson, Theresa, and Allenton Marsh State Wildlife Areas, the Loew Lake Unit of the Kettle Moraine State Forest, a 2,700-acre block of the Kettle Moraine State Forest – Northern Unit, and several small scattered habitat areas. If one looks a little further beyond the county line to include the remainder of the Northern Kettle Moraine Unit in Fond du Lac and Sheboygan County, Horicon Marsh State Wildlife Area and Horicon National Wildlife Refuge in Dodge County (which have some closed areas and other restrictions) several thousand additional acres of upland and marshland are available for hunting within a 50 mile radius of the Pike Lake Unit.

Regional Outdoor Recreation Supply Shortages

The majority of this section is taken from two sources. The first is the Park and Open Space Plan for Washington County – March, 2004 prepared by the Southeastern Wisconsin Regional Planning Commission (SEWRPC). This plan was adopted by the Washington County Board in June, 2004. The second source is 2005-2010 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP)⁷. Both the County Park and Open Space Plan and SCORP use population methodologies to determine deficiencies or shortages of recreational facilities within a regional context. Using these methods recreational shortages can be identified for the Lower Lake Michigan Coastal SCORP Region and Washington County. Application of these methods indicates a number of outdoor recreation facilities shortages that are occurring or will occur based upon current population growth projections.

While there are a number of outdoor recreation facilities shortages within the region, this section will focus upon needs that Pike Lake may be able to help fulfill. In some cases there is an adequate supply of a recreation element.

Trails (non-motorized)

SCORP indicates there is a regional shortage of mountain biking trails and water trails. The Washington County Park and Open Space Plan shows a county need for additional hiking, nature study, and skiing trails.

Camping

On a regional basis, SCORP shows there is a shortage of camping in the region. For Washington County, application of the per capita standards for campsites indicates that there is a need for 21 additional publicly owned campsites in Washington County to serve the anticipated 2020 population. The number of existing privately owned sites exceeds the need for such campsites under the standard for both the existing and anticipated 2020 population (*Park and Open Space Plan for Washington County*).

Picnicking

Application of the per capita standard for picnicking facilities at major parks indicates a need exists for approximately 40 additional picnic tables at major parks to serve the county's

⁷ Wisconsin Department of Natural Resources. 2006. Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP). 2005-2010.

anticipated year 2020 population. According to SCORP, the regional current supply is projected to be adequate for the next 12 years.

Beaches and Swimming

The Washington County Park and Recreation Plan indicates that existing publicly and privately owned beaches are adequate to serve both the existing and the anticipated year 2020 population. It should be noted that the largest lake in Washington County, Big Cedar Lake, does not have public beach access. Other County lake access points are smaller. Regionally, SCORP indicates the supply of beaches is adequate for current needs.

Hunting

SCORP indicates there is a shortage of wildlife areas (hunting opportunities) within the Lower Lake Michigan Coastal Region.

Fishing

SCORP indicates there is an adequate supply of fishing opportunities in the region. However, fishing opportunities from the Pike Lake Unit are limited due to dense shoreline vegetation, the lack of a fishing pier, and motor boat access.

Washington County Park and Open Space Needs

Outdoor Recreation Sites

The Washington County Park and Open Space Plan applied two standards to estimate the number and distribution of outdoor recreation sites and facilities needed to serve the anticipated future population of the County; per capita and accessibility standards. The per capita standards are intended to help estimate the total number of acres of land needed to satisfy requirements for park and recreational land and related facility requirements based on the anticipated future resident population of the County. The accessibility—or service radius—standards are intended to insure that public parks are spatially distributed in a manner that is convenient and efficient for the population they are intended to serve. It should be recognized that in some situations, while per capita standards may be met, a need may still exist for additional sites or facilities because of the relative inaccessibility or distance of an existing site or facility to some residents of the County. It should also be noted that for certain facilities, the accessibility standard for some residents of the County may be met by facilities located in adjacent counties.

The regional park and outdoor recreation standards call for a major park to be provided within four miles of residents of urban areas having a population of 40,000 or greater and within ten miles of residents of smaller urban areas and rural areas. In order to provide an increased distribution of major parks, the County Park and Open Space Plan applied the four mile service radius to all planned urban areas in Washington County regardless of population size. Planned urban service areas include the Cities of Hartford and West Bend; and the Villages of Germantown, Jackson, Kewaskum, Newburg, and Slinger. The unincorporated community of Allenton in the Town of Addison is also a planned urban service area under the year 2020 land use plan.

Open Space Preservation

According to the *Multi-Jurisdictional Comprehensive Plan for Washington County: 2035* there is need for open space preservation in Washington County. The open space preservation element of the plan consists of the following four major components:

Environmental Corridors: The first component is the preservation of primary environmental corridors, secondary environmental corridors, and isolated natural resource areas.

Special Natural Features: The second is the preservation of natural areas, critical species habitat sites, and geological and archeological areas in accordance with the recommendations set forth in the regional natural areas protection and management plan.

State Department of Natural Resources Projects: The third component is the continued protection of open space lands within Department of Natural Resources project boundaries within Washington County. These properties include the Loew Lake, Northern, and Pike Lake Units of the Kettle Moraine State Forest, the North Branch Milwaukee River Wildlife and Farming Heritage Area, and the Allenton Marsh, Jackson Marsh, and Theresa Marsh Wildlife Areas. The North Branch Milwaukee River Wildlife and Farming Heritage Area is a recently established Department of Natural Resources project boundary which, as lands are purchased, will facilitate the implementation of the County Park and Open Space Plan as it relates to the preservation of open space lands and prime agricultural lands within the project area.

Prime Agricultural Lands: The final, fourth component calls for the protection of prime agricultural land. Under the park and open space plan, it is recommended that Washington County and local units of government preserve to the extent practicable the remaining prime agricultural lands recommended for preservation under the Washington County farmland preservation plan, other than those lands located within the planned urban service areas. The preservation of agricultural lands will help protect the rural character and scenic vistas throughout Washington County and will also help to maintain agriculture as a significant economic activity and way of life.

III. Description and Analysis of the Pike Lake Unit - Kettle Moraine State Forest

Purpose of State Forests

State forests are defined by Wisconsin Statutes 28. The purposes and benefits of state forests are outlined in the following language of 28.04 (2):

(a) The Department shall manage the state forests to benefit the present and future generations of residents of this state, recognizing that the state forests contribute to local and statewide economies and to a healthy natural environment. The Department shall assure the practice of sustainable forestry and use it to assure that state forests can provide a full range of benefits for present and future generations. The Department shall also assure that the management of state forests is consistent with the ecological capability of the state forest land and with the long-term maintenance of sustainable forest communities and ecosystems. These benefits include soil protection, public hunting, protection of water quality, production of recurring forest products, outdoor recreation, native biological diversity, aquatic and terrestrial wildlife, and aesthetics. The range of benefits provided by the Department in each state forest shall reflect its unique character and position in the regional landscape.

(b) In managing the state forests, the Department shall recognize that not all benefits under par. (a) can or should be provided in every area of a state forest.

(c) In managing the state forests, the Department shall recognize that management may consist of both active and passive techniques.

Property History and Past Management

The Pike Lake Unit of the Kettle Moraine State Forest is located in Washington County, approximately 25 miles northwest of Milwaukee. The property abuts the Village of Slinger and the City of Hartford, with a portion of the property lying within Hartford (see Map B).

The Pike Lake property was proposed for state acquisition in the State Forest Report of 1955. The Conservation Commission approved the establishment of the unit on June 10, 1960. This report stated, "It is the intent and purpose of this property to preserve for public enjoyment and recreational use an area of geological significance and scenic beauty, including a substantial amount of high quality lake frontage". The current acquisition goal (i.e. acreage within the approved project boundary) for the Pike Lake Unit is 720 acres. Acquisition is 94 percent complete with 678 acres of land in state ownership, the lake is not within the state forest property boundary. The Pike Lake Property was designated as a State Park from its creation in 1971 until 1997, at which time its administrative designation was changed to incorporate the property into the Kettle Moraine State Forest.

Social/cultural/historical Resources

Pike Lake has a rich cultural history. A number of historic and prehistoric sites have been found around the lake and several on the Pike Lake Unit. The Pike Lake Unit sites include a

workshop site and campsite/village of an unknown prehistoric period; mounds, cemetery/burial sites, and corn hills/garden beds of Woodland – Historic Indian origin; late woodland period campsite/village and redeposited artifacts; and a Historic Indian campsite/village site. These sites are the ones that have previously been identified and recorded. Additional cultural resources almost certainly exist within the area, but are yet to be identified and recorded.

Natural Resources of the Pike Lake Unit

Topography and Soils

The Kettle Moraine landscape near Pike Lake is distinguished by its rugged glacial features – kames and eskers. Powder Hill, a large glacial kame, rises 1350' above sea level and is the second highest point in southeastern Wisconsin. The beach and picnic area are at approximately 1000' above sea level, and provide a flat recreational plain. The topography of the Pike Lake Unit is shown on Map E.

Soils of the Pike Lake Unit are predominantly Hochheim-Theresa. This is a well-drained soil that has a subsoil of clay loam, formed in loess and the underlying sandy loam to loam glacial till. On both the northern and southern edges of Pike Lake the soil is classified as Houghton-Palms-Adrian. This is a very poorly drained organic soil typically found along drainage-ways, in depressions, and in old lakebeds.

The United States Department of Agriculture's Soil Survey for Washington County indicates that there are moderate limitations of Hochheim-Theresa soil for recreational trails. The soil becomes muddy and slippery when wet and it is erodible. There are very slight limitations of this soil for the development of playgrounds, picnic areas, and utility buildings. There are both severe and very severe limitations to Houghton-Palms-Adrian soils for all development, including recreational trails, buildings, play areas, and campsites.

Water Resources and Fisheries

Pike Lake is a 522-acre natural lake that formed approximately 10,000 years ago during the Wisconsin glaciation with a maximum depth of 45' and a mean depth of 13.5'. It is classified as a mesotrophic-eutrophic lake with fairly large areas supporting abundant rooted plants and algae. The lake generally has a muck bottom but also has areas of more coarse material such as sand and gravel. Several shoreline areas in the southeastern and southern parts of the lake have gravel and rubble shorelines that provide excellent habitat for walleye spawning. Most of the western and southern shores are developed into year-around homes. The north shore is largely undeveloped wetland fringe. Most of the eastern shore is state owned and undeveloped, lying within the Pike Lake Unit property.

Walleye is the most abundant and sought after game fish in Pike Lake. Other species found in the lake include yellow perch, bluegill, rock bass, and northern pike. Due to moderate levels of mercury contamination, the lake falls under the general state mercury advisory.

The Rubicon River feeds and drains the Pike Lake. A small dam, on land owned by the Wisconsin Department of Transportation, is located at the lake's outlet and is used to control water levels in the lake. Several small feeder streams also contribute to the lake.

From Pike Lake the Rubicon River flows west from the city of Hartford to the Rock River. Rural and urban pollution has adversely affected water quality and habitat. Rough fish, particularly carp, dominate the fishery in the river's lower portion⁸

Vegetation and Natural Communities

The Pike Lake Unit has a variety of plant communities including mixed hardwood forest, conifer plantations, wetlands, restored native prairies and agricultural fields. Existing vegetation on the property is shown on Map F and listed on Table 8. About 50 percent of the current state-ownership is forested. Most of this, approximately 93 percent, is upland forest type, dominated by northern\central hardwoods, a mix of sugar maple, beech, basswood, white ash, and yellow birch. Oak dominated stands comprise only 25 acres. A small amount of lowland hardwoods also occur on the property. The non-forested lands are primarily grass, brush, marsh, cropland, and maintained areas. Several small permanent ponds and ephemeral ponds are also present. Invasive species such as honeysuckle, buckthorn, garlic mustard, Japanese barberry, wild parsnip, autumn olive, multi-flora rose and others are also present on the property.

Table 8: Vegetation of the Pike Lake Unit (managed lands)

Vegetation Type	Acres	Percent
Northern\central hardwood	344	51
Oak	25	4
Grassland/shrub	178	27
Lowland hardwood	28	4
Open canopy wetland	37	6
Open water – deep water marsh	9	1
Ponds and ephemeral ponds	13	2
Maintained active use grounds	28	4
Ag land	8	1

Wildlife Resources

A 2003 bird survey of the Pike Lake Unit (*Bird Survey of Pike Lake Unit of the Kettle Moraine State Forest; Thusius, 2002, unpublished report*) found 109 species of birds on the property and several others on adjacent lands. An unpublished habitat survey conducted in by the DNR and the Southeastern Wisconsin Regional Planning Commission (SEWRPC) shows that 89% of the Pike Lake Unit has significant wildlife habitat. The diversity of habitat types within the unit supports a wide variety of birds, mammals, reptiles and amphibians.

Wildlife regularly seen by visitors of the Pike Lake Unit include whitetail deer, wild turkeys, gray squirrels, cottontail rabbits, chipmunks, thirteen-lined ground squirrels, raccoons, crows, robins, cardinals, Canada geese, red-tailed hawks, woodchucks and other common species. The forested areas with a more open canopy often dominated by oaks provide habitat for birds such as Turkey, Wood Thrush, Least Flycatcher, redstart, Blue-gray gnatcatcher, Yellow-Throated Vireo, Ruby-throated Hummingbird, and Red-bellied Woodpecker. An occasional Ruffed Grouse may be seen in one of the small aspen stands on the Pike Lake Unit during peak years

⁸ Eagan, Lloyd L. 1989. Upper Rock River Basin Area-wide Water Quality Management Plan. Wisconsin Department of Natural Resources

of the 9 to 11 year ruffed grouse population cycle. Many bird species use the forested areas for nesting (Cooper's Hawk, Downy Woodpecker, etc.). These areas are also the richest in forest mammal species and include gray, southern flying, and fox squirrels, chipmunks, mice, cottontail rabbits, woodchucks, raccoons, opossums, red fox, coyotes and deer, and many small mammal species.

The property has several small, permanent and ephemeral ponds. Amphibians (chorus frogs, gray tree frogs, wood frogs, and salamanders), reptiles (painted and snapping turtles) and birds (mallards, blue-winged teal, barn swallow) are common, using the wetlands for breeding habitat.

Grasslands make up only a small percentage of the habitat but provide an important component for a variety of wildlife species - especially birds. Birds typically seen on the Pike Lake grasslands and brushy field edges include Tree Swallow, Eastern Bluebird, American Goldfinch, American Kestrel, Northern Cardinal, Song Sparrow, and Gray Catbird. The grasslands provide nesting and breeding habitat for larger birds such as Blue-winged Teal, Turkeys and Mallards, and open viewing areas for visitors of the property where they can see deer, turkeys, coyotes and an abundance of bird species.

The property has nine-acres of sharecropped agricultural lands that provide food (corn, soybeans, winter wheat, hay, etc.) and habitat for ground nesting birds like Blue-winged Teal, Mallards and Turkeys.

Canada Geese: The population of nesting "giant" Canada Geese (one of the two subspecies of Canada Geese that use the lake) around the edge of Pike is high and is causing nuisance problems during summer or fall for lakeshore property owners including the Pike Lake Unit. Hatching occurs in late April or May. By June the adult geese and their young are beginning to congregate on the beach and mowed areas. Many hours have been spent each day by Forest staff attempting to clean up the droppings on the beach and mowed areas. The droppings may also contribute to "swimmer's itch", an annual problem affecting swimmers. Control measures for the local goose population have begun, and the need continues. The lake is also a migratory stop-over area for both the giant and interior (*Branta canadensis interior*) subspecies of Canada Geese.

Whitetail Deer: Deer are relatively abundant on the Pike Lake Unit and surrounding properties. Fifty-seven deer (~50 per sq. mi.) on the Pike Lake Unit and 21 deer on adjacent private lands, were counted during a helicopter survey flown in March, 2003. No recent property deer survey has been done, but based on day to day observations of staff, the numbers of car/deer collisions, and the relatively consistent vegetative damage, the deer population on the property probably remains near the 2003 level. Fifty deer per square mile is considered "high" and may cause excessive damage to native vegetation, car-deer collisions, crop damage on surrounding lands, and other deer density-related problems.

The Pike Lake Unit lies within Wisconsin Deer Management Unit (DMU) 77C and is adjacent to DMU 68B. State Hwy 60 separates the two DMU's. Established "over-winter" (before fawns are born) deer population goals for Unit 77C is 15 deer per square mile of deer range; however, a rule change currently underway to increase the goal to 20. The goal for the adjacent Unit, 68B, is 30. (Deer range" includes all permanent cover, any open areas within 100 meters of permanent cover, and other areas where deer are known to occur.)

Deer numbers in both DMU's have been over their established goals for the past several years despite very liberal deer season frameworks. Current over-winter deer population estimates for

the two units are 39 (DMU 68B) and 37 (DMU 77C). Both units have been in Wisconsin's "Earn-a-Buck" deer zones, where hunters must harvest an antlerless deer before a buck.

Some deer browsing impacts on vegetation within the Pike Lake Unit is occurring. A browse survey conducted by DNR and USDA Wildlife Services staff in 2003 found that most shrubs showed some evidence of browsing and some areas had severe browsing. Three small (8' X 8') wire deer exclosures were erected in 2003 following the browse surveys. No noticeable differences between the vegetation growing inside vs. outside the exclosures has been documented. Installation of one or more additional, larger wire exclosures is recommended and would also be valuable as a learning tool for visitors.

Wild Turkey: Wild turkeys are common in the Pike Lake Unit and continued to increase in numbers. Turkeys were reintroduced into Wisconsin in 1976 and into Washington County in the late 1980's. Turkey hunting is common around the edge of the property. One nuisance turkey shooting permit was issued to a neighboring landowner of the Pike Lake Unit in 2007.

Potential Wetland Habitat Restoration Opportunities

Wetland depressions on the property should be surveyed to delineate drainage patterns and identify any subsurface drain tiles and drainage ditches. There may be opportunities to restore some wetlands by subsurface tile breakage, ditch plugs, silt removal or installation of small dikes or water control structures. In addition to habitat and water quality benefits, the sites could potentially be used for wetland restoration demonstration purposes.

Endangered, Threatened, and Special Concern Species and Communities

These are species and native communities that appear on the WDNR's Natural Heritage Inventory (NHI) Working List and are classified as "Endangered," "Threatened," or "Special Concern" by the State or Federal government.

As of June 2009 (WDNR 2007), NHI data indicates that two species of fish, one turtle, five birds, and three types of natural communities that are threatened, rare, or of special concern are present or may likely be found on the Pike Lake property. They are listed on Table 9, below. The records also show several others that might be on lands within one mile around the property and they are also listed.

Species of Greatest Conservation Need

Another record of species with special management needs is the Department's Wildlife Species of Greatest Conservation Need (SGCN) list. This appears in Wisconsin Strategy for Wildlife Species of Greatest Conservation⁹. SGCN include species already recognized as Endangered, Threatened, or Special Concern and other species that have low or declining populations in the state. In total, 43 SGCN species are potentially associated with the Kettle Moraine landscape.

⁹ Wisconsin Department of Natural Resources. 2006b. Wisconsin Wildlife Action Plan. Available at <http://dnr.wi.gov/org/land/er/wwap/plan/>.

Table 9: Endangered, Threatened, and Special Concern Species and Communities of the Pike Lake Unit and Adjacent Lands

Group	Common Name	Status*	Scientific Name
Species or Natural Communities within the Pike Lake Unit			
turtle	Blanding's Turtle	THR	<i>Emydoidea blandingii</i>
bird	Acadian Flycatcher	THR	<i>Empidonax virescens</i>
bird	Cerulean Warbler	THR	<i>Dendroica cerulea</i>
bird	Wood Thrush	SC/M	<i>Hylocichla mustelina</i>
bird	Brown Thrasher	SC/M	<i>Toxostoma rufum</i>
bird	Blue-winged Warbler	SC/M	<i>Vermivora pinus</i>
community	Southern Dry-mesic Forest	na	na
community	Forested Seep	na	na
community	Hardwood Swamp	na	na
Species within One Mile of the Pike Lake Unit			
fish	Banded Killifish	SC/N	<i>Fundulus diaphanus</i>
fish	Pugnose Shiner	THR	<i>Notropis anogenus</i>
fish	Least Darter	SC/N	<i>Etheostoma microperca</i>
mussel	Ellipse	THR	<i>Venustaconcha ellipsiformis</i>
bird	Black Tern	SC/M	<i>Chlidonias niger</i>
plant	Northern Wild-raisin	SC	<i>Viburnum nudum</i> var. <i>cassinoides</i>
plant	Cuckooflower	SC	<i>Cardamine pratensis</i>
plant	Down Willow-herb	SC	<i>Epilobium strictum</i>
plant	Northern Yellow Lady's-slipper	SC	<i>Cypripedium parviflorum</i> var. <i>makasin</i>

* **WI Status:** Protection category designated by the Wisconsin DNR. END = endangered; THR = threatened; SC = Special Concern. WDNR and federal regulations regarding Special Concern species range from full protection to no protection. The current categories and their respective level of protection are SC/P = fully protected; SC/N = no laws regulating use, possession, or harvesting; SC/H = take regulated by establishment of open closed seasons; SC/FL = federally protected as endangered or threatened, but not so designated by WDNR; SC/M = fully protected by federal and state laws under the Migratory Bird Act.

US Status: Federal protection status designated by the Office of Endangered Species, U.S. Fish and Wildlife Service indicating the biological status of a species in the United States. LE = listed endangered; LT = listed threatened; C = candidate for future listing.

Note: Only SGCNs highly or moderately associated with community types (H=high association, M=moderate association; SGCN's with a low affinity with a community type were excluded) and have a high or moderate probability of occurring in the Landscape are included (SGCN's with low probability of being associated with Landscape were excluded). Only communities designated as "Major" or "Important" management opportunities for the Landscape are shown. The community types, across the top of the table are important communities at the Pike Lake Unit. The highlighted species, on left side of the table, occur or may occur on the property.

Table 10 shows the Species of Greatest Conservation Need (SGCN) that have a high or moderate probability of occurring on or near the Pike Lake Unit and have the best opportunities for management on the property. These data are from Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need (WDNR 2005) and the Ecological Management Opportunities Table in the DNR Ecological Landscapes of Wisconsin Handbook¹⁰. Species on the SGCN list are wildlife species the Department considers to have special management needs, which includes Endangered, Threatened, or Special Concern species and other species that are in danger of further decline.

¹⁰ Wisconsin Department of Natural Resources. 2005. Ecological Landscapes of Wisconsin Handbook. Ecosystem Management Planning Team. Madison, WI.

Table 10: Species of Greatest Conservation Need (SGCN) - Pike Lake Unit

Species Significantly Associated with the Southeast Glacial Plains Ecological Landscape	Major Opportunity		Important Opportunity	
	Inland Lakes *	Southern Dry-mesic Forest	Ephemeral Pond	Northern Hardwood Swamp
BIRDS				
Acadian Flycatcher (THR)		H		
American Woodcock (SC/M)				M
Black Tern (SC/M)	M			
Blue-winged Teal (SC/M)	M			
Blue-winged Warbler (SC/M)		M		
Canvasback (SC/M)	M			
Cerulean Warbler (THR)		H		
Hooded Warbler (THR)		H		
Lesser Scaup (SC/M)	M			
Louisiana Waterthrush (SC/M)		H		
Red-headed Woodpecker (SC/M)		M		
Rusty Blackbird (SC/M)			M	
Wood Thrush (SC/M)		H		
Yellow-billed Cuckoo (SC/M)		M		
HERPTILES				
Blanding's Turtle (THR)	H	M	H	
Four-toed Salamander (SC/H)			H	M
Pickerel Frog (SC/H)	M		H	
FISH				
Lake Chubsucker (SC/N)	M			
Least Darter (SC/N)	M			
MAMMALS				
Eastern Red Bat	M	M	H	M
Hoary Bat	M		H	M
Northern Long-eared Bat	M	M	H	M
Silver-haired Bat	M		H	M
Woodland Vole		H		

* Several small ponds are within the Pike Lake Unit. Pike Lake is abuts the Pike Lake Unit, it is not within the property.

Table 10: Continued.

Species Moderately Associated with the Southeast Glacial Plains Ecological Landscape	Major Opportunity		Important Opportunity	
	Inland Lakes	Southern Dry-mesic Forest	Ephemeral Pond	Northern Hardwood Swamp
BIRDS				
Golden-winged Warbler (SC/M)				M
Red-shouldered Hawk (THR)		M	H	
Solitary Sandpiper (SC/M)			H	
Veery (SC/M)		M		H
Whip-poor-will (SC/M)		H		
Yellow-crowned Night-Heron (THR)			H	
HERPTILES				
Mudpuppy (SC/H)	H			
Yellow-bellied Racer (= North American Racer) (SC/P)		M		
FISH				
Banded Killfish (SC/N)	M			
Pugnose Shinner (THR)	M			

* Several small ponds are within the Pike Lake Unit. Pike Lake is abuts the Pike Lake Unit, it is not within the property.

Natural Resources of Local Significance

The Pike Lake Woods is a locally significant ecological resource on the property. It is located between Kettle Moraine Drive and Powder Hill Road. According to the Southeastern Wisconsin Regional Planning Commission¹¹, this feature is a low-to-medium quality dry-mesic woods that has suffered from past disturbance, including grazing and selective logging. The irregular kettle moraine topography includes a prominent wooded kame at the southeast corner.

¹¹ SEWRPC Planning Report No. 42, *A Regional Natural Areas Critical Species Habitat Protection and Management Plan*, September, 1997, prepared by the Southeastern Wisconsin Regional Planning Commission, http://www.sewrpc.org/publications/pr/pr-042_nat_areas_critical_species_habitat_protection_management_plan.pdf.

Resource Management Issues or Limitations

- The high deer population on and around the property is impacting the regeneration of a variety of trees and understory plants. A 2003 DNR helicopter survey found 50 deer per square mile on the property. The over-winter deer goal for this deer management unit (77C) is 15 per square mile (proposed to be raised to 20). Continued high deer numbers would limit or increase the difficulty of some vegetation management options.
- An exotic, invasive insect, the emerald ash borer, has recently been detected in southeastern Wisconsin. If it spreads, it likely would cause significant mortality to native ash trees. This likely will become a management issue for the Pike Lake Unit.
- Exotic plant species are and will continue to be a significant management issue.
- Heavy rains in recent years have revealed a significant soil erosion problem for the property and potential water quality problem for Pike Lake. Large amounts of storm runoff have flowed from adjacent farm fields across the property to the lake, causing significant washouts in several locations.

Recreational Facilities and Use of the Pike Lake Unit

Visitation Estimates and Trends.

Visitation estimates to the Pike Lake Unit, shown in Table 11, indicate there has been a significant increase since 1995. Visitation increased by over 22%. Two other nearby state properties, Harrington Beach State Park and the Northern Unit of the Kettle Moraine State Forest, saw their attendance decrease during that same time period.

Table 11: Comparison of Annual Pike Lake Unit Use for 1995, 2000, and 2003 to Other Similar State Properties in the Area

Annual Recreation Visitors	1995	2000	2003	% Change from 1995 to 2003
Pike Lake Unit-KMSF	154,890	156,325	189,585	+ 22.4%
Harrington Beach State Park	115,064	114,912	94,773	-17.6%
Northern Unit-KMSF	921,634	620,903	723,654	-21.5%

Current Public Uses of the Property

Recreational use of the Pike Lake Unit is year round and quite broad, including trail-based activities such as hiking, snowshoeing, and skiing (traditional and skaters); water-based activities such as swimming, wind surfing, canoeing/kayaking, and cold and warm water fishing; picnicking; camping; and nature-based activities such as birding, nature study and photography. The recreational facilities and trails of the Pike Lake Unit are listed in Tables 12 and 13, are shown on Map G, and discussed further below.

Table 12: Developed Recreational Facilities of the Pike Lake Unit

	Camping	Beach and Picnic Area	Observation Tower
Pike Lake Unit – KMSF	10 sites with electric 22 non-electric sites 1 accessible site	500 ft. beach 312 parking stalls 2 shelter buildings	60 ft.

Table 13: Recreational Trails of the Pike Lake Unit

Trail Type	Length
hiking/skiing trail	8.0 miles
National Scenic Ice Age Trail	2.6 miles (all but 0.2 miles are part of the 8.0 property trail system listed above)
paved accessible trail	0.5 mile
biking trail	0.75 mile
snowmobile trail	1.0 mile (part of a regional snowmobile trail network)
nature trail	0.8 mile
astronomy trail	.08 mile

Camping

The Pike Lake Unit of the Kettle Moraine State Forest offers 32 campsites of which 24 are wooded and 8 are open. Ten sites have electricity. All sites except two are reservable. Facilities in the campground include a shower building, flush toilets, water fountains, a woodshed with firewood, and a dump station.

Camping Demand: Due to its proximity to Milwaukee and Interstate 41, the Pike Lake Unit has a high demand for camping, particularly on summer weekends, with an average occupancy rate close to 95%. The weekday occupancy rate is lower at 42%. About 60 percent are in tents and 40 percent in an RV or trailer. A similar pattern is also exhibited at the campgrounds in the Northern Unit of the Kettle Moraine State Forest. Table 14 compares the occupancy rates of the Pike Lake Unit to the Northern Unit. The demand for electric sites is especially high at both state forest units.

Table 14: Comparison of Campground Occupancy Rates for Weekdays and Weekends at the Pike Lake Unit to the Northern Unit, KMSF

Property	Total Number of Campsites	Average Summer Weekday Occupancy Rate	Average Summer Weekend Occupancy Rate
Pike Lake Unit-KMSF	32 family sites	42%	94%
Northern Unit-KMSF	337 family sites	22%	75%

Picnicking – Beach - Swimming

Gatherings with picnicking, swimming and sunbathing featured activities are highly popular at the Pike Lake Unit, being one of the main draws to the property. This use is funneled into the intensively used “day-use area” along the lake. In addition to facilities for sunbathing, swimming, and picnicking the “day-use area” also accommodates the launching of canoes/kayaks and windsurf boards into the lake.

The day-use area has a 500' beach along on the Pike Lake shore, parking for 312 vehicles, two reserveable shelter buildings with electricity, two flush toilet buildings and a public entrance/contact station. Currently the facilities are not meeting the demand. Many of the parking stalls being filled on summer days. When full, the parking lot is closely monitored by staff and no one is let into the parking area until a vehicle leaves. This is to ensure adequate room for all users on the beach and in the picnic area.

Facility Needs

KMSF-Pike Lake Unit is 38 years old. User patterns change and the demand for facilities that better suit their individual recreational need are increasing. The current campground is only sufficient for small tents or a pop-up trailers. The campground does not accommodate 40 ft RV's with a vehicle in tow. Many RV'ers want pull-through campsites that allow them to camp overnight without unhooking a tow vehicle or having to back into a confined campsite.

Many Pike Lake's campers stop only for the night, as the campground is only four miles off of State Hwy. 41, a major north/south highway. There are also many campers that reserve campsites well in advance in advance and make Pike Lake a destination property for their vacation and weekends. And some camp here while attending functions in the Milwaukee area. Many of these campers prefer to camp at pike lake because of its smaller quieter atmosphere. They have grown tired of the noisy urban use patterns (in a campground setting) that often occur at the larger properties.

Present use buildings on the property are showing their age. Repair costs for plumbing, electrical and structural problems are increasing as well as the number of incidences of failure of these items. Particularly, updated (family friendly) toilet/shower facilities are needed.

Pike Lake Boat Access:

Pike Lake has four boat access sites, none of which are located at the Pike Lake Unit. The four motorized boat access sites include two town road ends and two private launches. People routinely launch canoes, kayaks and similar craft from the Pike Lake Unit's day use and picnicking area.

The public boat launch sites are unimproved Town of Hartford road ends on the west side of the lake. No off-street parking is provided and parking is not allowed on the street. People who use this site typically launch their boat, then one person drives the vehicle and trailer to the Pike Lake Unit's beach parking lot on the east side of the lake while another person boats across the lake and picks up the driver. These road end launches are also used by lake residents who do not need on-site parking.

The two private access sites on the west shore of the lake are Reef Point Resort and Johnny's Landing. They have hard-surfaced launches with both gravel and paved parking lots, with some grass overflow parking areas. The Department has an agreement with Reef Point to provide 17

+ 1 ADA car/trailer parking stalls to the public. Johnny's Landing provides parking for numerous car/trailer units. The use fee at both sites is \$7.00 to launch and park.

Boat access sites, both public and private, provide opportunities for individuals who do not own land contiguous to a body of water to participate in such water-related recreation activities as motor boating, waterskiing, fishing, and canoeing. The Washington County Regional Park and Open Space Plan recommends that rivers and major lakes – lakes with a surface area of 50 acres or more – provide adequate public boat access consistent with safe and enjoyable participation in various boating activities. The Department, in keeping with State Statutes and regulations which seek to assure that all Wisconsin residents have access to publicly owned inland waters, has administrative rules regarding lake access, and has surveyed all the major lakes in the State to determine if adequate public access to each is provided and maintained.

Public water access standards are set by Chap. NR 1.91 Wis. Administrative Code. The public access standard for the 522-acre Pike Lake is a minimum of 17 + 1 ADA and a maximum of 33 + 2 ADA vehicle/trailer parking spaces. The Department has a two-year private providers agreement with Reef Point Resort to provide 17 + 1 ADA public launch parking spaces. This meets the minimum standard; therefore, 16 more public access spaces could be provided to meet the maximum access standard. There is demand from Pike Lake Unit visitor-boaters for direct access from the property.

There is a need for better carry-in access facilities for non-motorized canoe, kayak, and windsurfing watercraft at the Pike Lake Unit. Improvements to the space currently provided is recommended, to make prepping and launching non-motorized watercraft easier, and to reduce conflicts between boaters, swimmers and picnickers.

Hunting

Hunting is not allowed in the Pike Lake Unit of the Kettle Moraine State Forest, except for waterfowl hunting on Pike Lake. Previously (1971-1997), when the Pike Lake Unit was designated as a State Park it was a wildlife refuge where hunting was prohibited by statute. When Pike Lake was reclassified as a State Forest in 1997, the hunting prohibition was continued pending consideration in the property master planning process.

Use Conflicts

Over the last several years the Pike Lake Unit's staff have noted use conflicts in several areas.

- Conflicts occur between cross country skiers and snowshoe enthusiasts. Grooming the ski trails smooth invites the snowshoe hikers to travel through the forest virtually unimpeded. Snowshoe users and all hikers are prohibited from using the trail for any other recreational activity other than skiing (NR 45). A demand has emerged within the last 3 years ever since snowshoeing has become popular.
- Kayaker and boater conflicts along the Pike Lake Unit's shoreline have been on the rise over the last 3 years also due to the increase in the popularity of kayaking. Kayakers and boaters are forced to use the same access point off of the north picnic area. When boating traffic (or mooring) is heavy, kayakers and canoeists are forced to locate to other areas of shoreline where

they can access the water. Boats are moored so densely that a person could walk from boat to boat without getting wet.

Other conflicts noted by staff:

- Pets vs. hikers and picnickers. Pets not allowed on the beach or picnic area (NR 45)
- Wind surfers vs. swimmers and boaters. Access is limited because of motorized boat traffic.
- Snowmobilers vs. Cross country skiers. Snowmobilers like speed, which produces noise. Skiers like solitude.
- Solitude campers vs. family reunion campers. The lack of a group camp poses a problem for law enforcement trying to satisfy the needs of both user groups. Solitude campers seek a true outdoor “bonding” experience. The reunion folks are striving to bond with people they haven’t seen in a while. Enforcement of “quiet hours” is very problematic.

Perceived public demand for new or expanded facilities or uses

The following list is based on requests by visitors to Pike Lake and observations by property staff.

- A boat launch facility is needed. A property on a lake that does not have an access for boats is puzzling to many visitors.
- Requests for more electrical campsites are probably our number two request right after a boat launch.
- Group campsites are needed. Groups (families, companies, schools) are using the present “family” campground in larger numbers.
- Demand for winter camping has increased, but the lack of pit toilets has been the primary reason for the campground’s winter season closure.
- Demand for picnic and swimming areas where pets are allowed is increasing, as evidenced by substantial overcrowding on peak use days.
- The windsurfers, kayakers, canoeists, and kite surfers are all requesting large open areas along the shoreline to accommodate their recreational activity.
- There is a large and increasing demand for education programs by schools and family visitors, both winter and summer months. Many local schools have requested an amphitheater and a classroom be added to property.
- A paved bicycle trail from the campground to the beach has been requested many times. Hardened trails throughout the property have been requested.
- Demand for horse trails on the property.
- Hunting, all types.

Administrative Facilities

The park administrative buildings include a visitor station and office building. In addition to providing public contact services it houses offices for staff in the Parks, Wildlife, Forestry, and Conservation Warden programs. There also is a shop/maintenance building on the property.

Staffing

Staff positions at the property include three permanent and various seasonal staff.

Permanent staff for KMSF-Pike Lake

- 1 Superintendent,
- 1 Ranger/Assistant Property Manager,
- 1 Ranger-Enforcement

Summer staff

- 6-Visitor service associates LTE
- 2-Ranger-enforcement officers LTE
- 3-Maintenence laborers LTE

Volunteer staff cover a wide variety of tasks including:

- Campground hosting May through Oct
- Maintenance (trails, vehicles, carpentry, sign production, cleaning)
- Interpretive Programs
- Friends Group activities-Special programs, funding assistance.

IV. Findings and Conclusions

Findings

The Property's Purpose

State forests are defined and authorized by Chapter 28, Wis. Stats.. State Forests may be managed for a broad range of recreation, education, and vegetative management activities and benefits, which are to be specified for each property in its property master plan.

Social Setting and Landuse Trends

The Pike Lake property is a highly popular and intensively used unit of the Kettle Moraine State Forest. It is located in southern Washington County 25 miles from the Milwaukee Metropolitan Area. The landscape in this part of Southeastern Wisconsin is characterized by a mix of urban areas, small villages, rural subdivisions, and farmland, forest, and wetlands. Washington County and especially Pike Lake's Hartford-Slinger area is among the fastest growing areas in the region. While agricultural and other undeveloped lands are still common here, the countryside is rapidly developing as cities and villages push outward and more rural subdivisions are platted. The County's population is projected to grow by nearly 34 percent (39,800 people) over the next 25 years.

Ecological Needs, and Opportunities

Over time forest clearing, prairie and savanna conversion for agricultural use has radically changed the Southeastern Wisconsin landscape, creating extensive habitat loss, fragmentation, simplification, and the degradation from invasive species. Development pressure upon open-space and natural habitat is high and the demand for recreational space grows annually along with population growth. A continued loss and further fragmentation of upland and aquatic communities from development is likely.

The Kettle Moraine area has the largest extent of forest land in this Ecological Landscape and in southeastern Wisconsin; however, in the Pike Lake area larger blocks of habitat, particularly forest, are generally absent. In the Kettle Moraine portion of this ecological landscape upland forests, swamp, wetlands, and riparian areas are important natural communities with major or important conservation opportunities and needs as discussed below:

Upland Forests: There is a need in this ecological region to protect and enhance the southern dry-mesic forest community type. This community type, as well as larger blocks of all forest habitats, are highly important for many species of conservation need. Regionally, the Kettle Moraine as a whole offers opportunities to manage at larger scales (i.e. larger patch sizes) and maintain populations of area sensitive species, particularly southern forest birds that have seriously declined or disappeared elsewhere in this ecological landscape due to habitat fragmentation.

While oak woodland and oak savanna are other community types in need in the broader ecological region, the Mid-Kettle Moraine Area and the Pike Lake Unit is much less suited for this management for these than the Southern Kettle Moraine area farther south.

Swamps, Wetlands and Riparian Areas: Hardwood swamps and ephemeral ponds are natural community types that support unusual assemblages of species, are limited in abundance, and are therefore a regional need for conservation and protection. Natural riparian areas in the region, that also provide critical habitat for many species, are also in need of conservation as most have been degraded by forest clearing, invasive species infestation, urban development, and intensive agricultural practices. These natural communities and habitats are present on the Pike Lake Unit in limited amounts. A larger extent of wetlands and swamp habitats lie on adjacent private lands.

Wildlife Species of Greatest Conservation Need: A number of Species of Greatest Conservation Need are associated with habitats on the Pike Lake Unit and adjacent lands. Eighteen species have high or medium association with the southern dry-mesic forest, 12 with ephemeral ponds, and 8 with northern hardwood swamp habitat.

Vegetation Management Limitations: There are two primary challenges facing long-term vegetation management on the Pike Lake Unit: One is invasive, exotic species, which are abundant in some locations on the property, and the other is the high deer population which may limit forest regeneration efforts.

Recreational Needs and Opportunities

The Pike Lake Unit is a popular Southeastern Wisconsin's and Washington County recreational property offering high quality camping and trail opportunities, as well as the largest expanse of public lake frontage in the county. The National Scenic Ice Age Trail is also prominent property feature. The majority of visitors to the property take part in day-use recreational activities, including swimming, picnicking, and hiking. The Pike Lake Unit is also a destination for campers. Visitation is steadily growing, increasing nearly 25% over the last 10 years.

This relatively small 720 acre property is already fairly intensively developed and it has two public highways bisect the property, which are limiting factors for recreational expansion and redevelopment.

Camping

Within 25 miles of Pike Lake there are just over 400 public family campsites, 20 public group campsites (mostly in the Northern Kettle Moraine Unit), and about 900 private campsites. This does not include the Pike Lake Unit's 32 family sites.

According to SCORP, there is a shortage of campgrounds in the southeastern Wisconsin region. There is an increasing local area demand as well, with a projected need for an additional 20+ campsites by 2020 just to serve the growing Washington County population. Washington County parks do not provide camping.

The current occupancy rate for the Pike Lake campground is high, averaging 94% for summer weekends. Comparatively, the Northern Unit – KMSF is 75%. According to Pike Lake staff, campers frequently request improved or expanded campground amenities including more electrical sites and accommodations for larger RV campers. The current campground was not

designed for RV rigs the size of many of today's units, which makes access difficult. Visitors also ask for additional types of camping opportunities, particularly somewhat-remote walk-in camping and winter camping.

There is a strong and growing demand for group camping at Pike Lake as many extended families camp together. The property does not have a separate group campground and conflicts commonly erupt between campers wanting solitude/quiet and noisy camping groups.

Day Use (picnicking, beach/swimming)

According to SCORP, the regional supply of picnicking facilities is adequate for the next eight years, and the beach supply meets current needs. In Washington County the current beach supply is considered adequate as well overall, but people are often turned away at the most popular beaches, including the Pike Lake Unit where parking is the most limiting factor. Pike Lake staff report that large group picnicking gatherings are common and that there is a need for improved facilities to better serve this use. There are also frequent requests from pet owners for a pet picnic area and pet water access site.

Pike Lake Boat Access

The Pike Lake Unit does not have a motor boat access. All lake access is provided by two private and one sub-standard public site (a dead-end street with no parking). Public water access standards are set by Chap. NR 1.91. The public access standard for a lake this size, 522 acres, is a minimum of 17 and a maximum of 33 vehicle/trailer spaces. Currently, the Department has a two-year private providers agreement with one of the private access providers for 18 public spaces. The current level of public access is barely adequate for a lake this size. The private sites are not guaranteed to continue in operation in perpetuity. There is demand from Pike Lake Unit visitor-boaters for direct access from the property, as the access sites across the lake are not convenient.

There is a need for better carry-in access facilities for non-motorized watercraft (canoers, kayakers, windsurfers) at the Pike Lake Unit. Improved space is needed to make prepping water craft and launching easier and to reduce conflicts between boaters and picnickers.

Trails

Regionally, SCORP shows there is shortage of mountain biking trails and water trails (non-motorized). Washington County calls for additional hiking, nature study, and skiing trails.

The Pike Lake Unit staff report a need for paved "family" bike trails on the property, particularly between the campground and day-use area at the lake. Occasionally there are requests for horse trails, they come primarily from local horse riders. Snowshoeing is a growing sport on the property and conflicts have developed between skiers and snowshoers on ski trails.

With the high density of facilities and uses and with two public highways bisecting the property the opportunities are highly limited for developing mountain bike trails or any significant additional miles of hiking and ski trails.

In addition to the regional need for more nature study opportunities, the demand at the Pike Lake Unit is strong as well. Property staff receive frequent requests from visitors and area schools for expanded year-round nature education facilities and programs. A nature trail exists on the property and there are opportunities to expand the trail and develop additional nature

interpretation and education programs and facilities. An amphitheater and classroom space have been specifically requested by property visitors.

Hunting and Fishing

Hunting currently is not allowed on the Pike Lake Unit. While opportunities for a wide variety of upland game and waterfowl hunting are available in this region; SCORP shows there remains a shortage of public hunting land in the region.

Fishing is one of the most popular activities within the region. SCORP indicates that regionally there is an adequate supply of fishing opportunities. Even though the Pike Lake Unit has the area's largest amount of public lake frontage, shore fishing opportunities are limited by dense shoreline vegetation. The property does not have a fishing pier and there is no motor boat access.

Property Infrastructure Needs

The main public contact/administrative building is newer and adequate for current uses. However, most other public use buildings on the property are old and in need of renovation.

Conclusions

The Pike Lake Unit is a scenic, intensively used year-round outdoor recreational property that also supports important ecological resources. This analysis shows there are opportunities to expand or enhance recreational facilities to better meet the current and projected recreational needs while protecting and enhancing critical habitats for rare species. These opportunities and limitations for the Pike Lake Unit are summarized below:

Ecological Resources and Habitat Needs, Opportunities and Limitations

The Pike Lake Unit and adjacent lands offer opportunities to conserve and enhance several regionally important natural communities and habitats, primarily larger blocks of unfragmented upland forest, hardwood swamp, ephemeral ponds, and riparian areas. There are secondary opportunities to manage for oak and oak savanna. These habitats are highly or moderately associated with 38 Species of Greatest Conservation Need. Invasive species and high deer numbers present on-going management challenges that need to be considered in future property management plans.

Recreational Needs, Opportunities, and Limitations

The data show there is a regional and county need for additional camping, and a regional or county need for mountain bike trails, ski trails, non-motorized water trails, nature study/education, and hunting opportunities. As is discussed below, the Pike Lake Unit has a limited capability to help address the regional or county shortage of camping, non-motorized water trails, and nature study/education. The property does not have the capacity for any significant trail expansions and somewhat limited opportunities for hunting.

The capability to add or expand recreational facilities at the Pike Lake Unit is limited. The primary factors being the property's small size (720 acres), its rugged glacial terrain, the fact that its already well developed and has two public highways bisecting it. The property offers

limited to modest opportunities for expansion of camping and day use capacity. Significant trail expansions would require the acquisition of additional acreage. The property does not have the capability to support new horse trails and mountain bike trails. There is only a limited capability on the current acreage for expansion of existing hiking/ski trails. Major trail expansions would require the acquisition of additional acreage.

There is an on-property need and capability to expand and improve a variety of day-use facilities, camping and nature study/education opportunities on the Pike Lake Unit. These actions would also help meet some of the broader regional and county needs as well.

Specifically, on-property needs that could be addressed in the master plan include:

- Additional facilities for modern all-season camping, group camping, and walk-in campsites for Ice Age Trail hikers and others seeking more solitude.
- For the day-use area: expanded parking, picnic facilities for larger groups, improved non-motor watercraft access, a motor boat landing, and a fishing pier.
- Expanded nature study/education facilities and programs for visitors and area school groups.
- An improved family bike trail connecting the campground and day-use area.

Pike Lake's public motor boat access is currently 15 vehicle parking spaces below the standard for a lake its size. The addition of a public boat access on the Pike Lake Unit could meet this need while providing improved services to property visitors.

Needs, Opportunities, and Limitations for Property Expansion

The Pike Lake area is rapidly urbanizing. As a result development pressure on open-space and natural habitats are high and the demand for recreational space grows annually. The small size of the property is a limiting factor for expansion of recreational uses, particularly trails and hunting, and for native community and habitat management. Larger blocks of agricultural land and wooded wetlands, exist to the south and southwest of the Pike Lake Unit offer a potential opportunity for property expansion. Acquisition of additional lands would provide important habitat management opportunities and public use benefits. Due to development pressures, only a narrow window of opportunity may exist.